



TEST REPORT

Test Report No. NC1212123.4 Date of issue: 25 March 2013

Manufacturer CalAmp WNG

Address 299 Johnson Avenue – Suite 110
Waseca MN 56093

Name of Equipment INTEGRA-TR, UHF 406.1-440 MHZ, 6.25/12.5K DUAL BAND IF

Model No(s) Tested 2424048351

Serial No(s) Tested 594819

Test Result **Compliant** **Non-compliant**

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REVISION RECORD

REVISION	TOTAL NUMBER OF PAGES	DATE	DESCRIPTION
	19	21 March 2013	Initial Release



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Sign Explanations:

- not applicable
- applicable

EMC TEST REGULATIONS:

The tests were performed according to the following regulations:

FCC Part 2, Section 2.1053

FCC Part 90, Section 90.210 (e)(3), (d)(3)

ENVIRONMENTAL CONDITIONS IN THE LAB

	<u>Actual</u>
Temperature:	: 14°C
Relative Humidity	: 22%
Atmospheric pressure	: 98 kPa

POWER SUPPLY UTILIZED

Power supply system : 13.3 VDC

TEST EQUIPMENT

All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.

MEASUREMENT UNCERTAINTY

The test system for conducted emissions is defined as the LISN, tuned receiver or spectrum analyzer, and coaxial cable. The test system has a measurement uncertainty of ± 1.8 dB. The test system for radiated emissions is defined as the antenna, the pre-amplifier, the spectrum analyzer and the coaxial cable. The test system has a measurement uncertainty of ± 4.8 dB. All measurement instrumentation is traceable to the National Institute of Standards and Technology and is calibrated according to internal procedure.

TEST METHODOLOGY

Radiated emissions are measured in the frequency range of 30 to 1000 MHz using a spectrum analyzer and appropriate broadband linearly polarized antennas. Measurements between 30 MHz and 1000 MHz are made with a 120 kHz / 6 dB bandwidth and quasi-peak detection and measurements above 1000 MHz are made with a 1 MHz RBW/VBW / 6 dB bandwidth and peak detection, 1 MHz RBW / 10 Hz VBW for average detection. Table top equipment is placed on a non-conductive support 80 cm above the ground plane. Interface cables that are closer than 40 centimeters to the ground plane are bundled in the center in a serpentine fashion so they are at least 40 centimeters from the ground plane. Cables to simulators/testers (if used in this test) are routed through the center of the table and to a screen room located outside the test area. The antenna is positioned 3, 10 or 30 meters horizontally from the EUT. To locate maximum emissions from the test sample the antenna is varied in height from 1 to 4 meters, measurement scans are made with both horizontal and vertical antenna polarizations and the EUT is rotated 360 degrees. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB / decade (inverse linear-distance for field strength measurements). The field strength levels were measured per ANSI C63.4.

Per TIA/EIA 603-C substitution measurements are performed by replacing the DUT with a substitution antenna. The center of the substitution antenna is approximately at the same location as the center of the DUT. The substitution antenna is fed with a signal generator connected to the antenna by means of a nonradiating cable. With the antennas polarity matching that of the spurious signal and with the signal generator tuned to the spurious frequency, the test antenna's height is adjusted to obtain a maximum reading at the spectrum analyzer. The signal generator output level is adjusted until the previously recorded maximum reading for this set of conditions is obtained. The power in dBm is calculated by reducing the readings obtained in the previous steps by the power loss in the cable between the generator and the antenna, and further correcting for the gain of the substitution antenna by the following formula:

$e.i.r.p. (dBm) = P_g (dBm) - cable\ loss (dB) + antenna\ gain (dBi)$ where:

E.i.r.p. is the substitution antenna's equivalent power

P_g is the generator output power

The *e.i.r.p.* levels are the absolute levels of radiated spurious emissions in dBm.

Radiated emission limits - Transmitter

FCC Part 90, Section 90.210 (e)(3), (d)(3)

Test summary

The requirements are: ■ - MET □ - NOT MET

The transmitters were set to 1 W or 5 W power settings. Frequencies adjusted to 406.15 MHz, 440 MHz.

The maximum level of unwanted radiated emissions outside the allowed band is -31.3 dBm eirp at 812.306 MHz with the transmitter set to 406.15 MHz and 5 W. Minimum margin of compliance is 11.3 dB.

Test location

Oakwood Lab (Open Area Test Site)

Test Distance

3 meters

Test equipment

TÜV ID	Model Number	Manufacturer	Description	Serial Number	Cal Due
OWLE03202	EM-6917B	Electro-Metrics	Biconicalog Periodic	101	02-Jul-13
WRLE02681	85650A	Hewlett-Packard	Quasi-Peak Adapter	2430A00562	29-Jun-13
NBLE03196	8566B	Hewlett-Packard	Spectrum Analyzer	2240A01856	04-Jan-13
NBLE03195	85662A	Hewlett-Packard	Analyzer Display	2648A13518	04-Jan-13
OWLE02671	8447D	Hewlett-Packard	Preamplifier	2648A04942	Code B 16-Jan-13
NBLE02651	SMY02	Rohde & Schwarz	Signal Generator	1062550212	27-Dec-13 ¹
WRLE03236	UHAP-10dB	Schwarzbeck	Dipole Antenna 300–1000 MHz	164	Code Y
WRLE02075	3115	EMCO	Ridge Guide Ant. 1-18 GHz	9001-3275	06-Feb-13
WRLE03958	SL18B4020	Phase 1 Microwave	Preamplifier 1 – 18 GHz	0002	Code B 30-Jan-13
WRLE03229	3115	Electro-Mechanics	Ridge Guide Antenna	2483	16-Aug-13

Cal Code B = Calibration verification performed internally.

Cal Code Y = Calibration not required when used with other calibrated equipment.

¹ The equipment was calibrated on 27 Dec 2012 and was found to be in tolerance as received.

Test Limit

-20 dBm e.i.r.p. (mask d)

Any emission must be attenuated below the power (P) of the highest emission contained within the authorized bandwidth. On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10 \log(P)$ dB or 70 dB, whichever is the lesser attenuation.

-25 dBm eirp (mask e)

On any frequency removed from the center of the authorized bandwidth by more than 4.6 kHz: At least $55 + 10 \log(P)$ or 65 dB, whichever is the lesser attenuation.

Test Data

See following pages

Substitution example;

Substitution performed at 812.306 MHz

Matching signal generator level -24.8 dBm

Coax attenuation 0.3 dB

Substitution antenna gain -6.2 dBi

$-24.8 \text{ dBm} - 0.3 \text{ dB} + -6.2 \text{ dBi} = -31.3 \text{ dBm eirp}$

$\text{Eirp (dBm)} = \text{Field strength (dBuV/m @ 3m)} - 95.6$

Measurement summary eirp based on substitution data

Measurement summaries

Model 2424048351, 406.15 MHz, 1 watt
30-1000 MHz

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	FINAL eirp (dBm)	POL / HGT / AZ (m)(DEG)
50.48 MHz	66.9 Pk	0.55 / 12.88 / 24.4 / 0.0	55.93	-39.7	V / 1.00 / 158
812.306 MHz	50.2 Pk	2.76 / 21.51 / 24.03 / 0.0	50.44	-45.2	H / 1.00 / 124
373.563 MHz	46.3 Pk	1.74 / 14.57 / 24.3 / 0.0	38.31	-57.3	V / 1.00 / 0
353.91 MHz	45.8 Pk	1.66 / 14.4 / 24.3 / 0.0	37.56	-58.0	V / 1.00 / 0
393.243 MHz	44.05 Pk	1.81 / 15.23 / 24.3 / 0.0	36.79	-58.8	V / 1.00 / 0
412.875 MHz	40.1 Pk	1.88 / 16.02 / 24.3 / 0.0	33.69	-61.9	V / 1.00 / 0

1-6 GHz

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	FINAL eirp (dBm)	POL / HGT / AZ (m)(DEG)
1.218 GHz	70.8 Pk	3.48 / 26.46 / 50.3 / 0.0	50.44	-45.56	H / 1.00 / 90
2.322 GHz	59.0 Pk	5.64 / 27.93 / 47.37 / 0.0	45.2	-50.8	V / 1.00 / 180
2.324 GHz	57.1 Pk	5.65 / 27.93 / 47.41 / 0.0	43.27	-52.73	H / 1.00 / 180
4.062 GHz	45.3 Pk	8.62 / 32.08 / 46.32 / 0.0	39.68	-56.32	V / 1.00 / 0
3.655 GHz	45.7 Pk	8.19 / 31.71 / 47.24 / 0.0	38.36	-57.64	V / 1.00 / 0
3.249 GHz	47.35 Pk	7.76 / 30.72 / 47.77 / 0.0	38.07	-57.93	V / 1.00 / 0
2.437 GHz	52.45 Pk	5.9 / 28.33 / 48.83 / 0.0	37.86	-58.14	V / 1.00 / 0
2.843 GHz	49.6 Pk	7.06 / 29.32 / 48.3 / 0.0	37.68	-58.32	V / 1.00 / 0
1.625 GHz	56.6 Pk	4.25 / 26.25 / 49.55 / 0.0	37.56	-58.44	V / 1.00 / 50

Model 2424048351, 406.15 MHz, 5 watt
30-1000 MHz

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	FINAL eirp (dBm)	POL / HGT / AZ (m)(DEG)
812.306 MHz	64.05 Pk	2.76 / 21.51 / 24.03 / 0.0	64.29	-31.3	H / 1.00 / 140
50.48 MHz	66.7 Pk	0.55 / 12.88 / 24.4 / 0.0	55.73	-39.9	V / 1.00 / 180
353.907 MHz	55.35 Pk	1.66 / 14.4 / 24.3 / 0.0	47.11	-48.5	H / 1.00 / 90
373.563 MHz	54.7 Pk	1.74 / 14.57 / 24.3 / 0.0	46.71	-48.9	H / 1.00 / 90
393.243 MHz	48.6 Pk	1.81 / 15.23 / 24.3 / 0.0	41.34	-54.3	H / 1.00 / 270
412.875 MHz	45.75 Pk	1.88 / 16.02 / 24.3 / 0.0	39.34	-56.3	H / 1.00 / 270
714.78 MHz	40.6 Pk	2.58 / 19.71 / 24.28 / 0.0	38.61	-57.0	V / 2.00 / 270
67.937 MHz	53.15 Pk	0.61 / 9.08 / 24.4 / 0.0	38.44	-57.2	V / 1.00 / 180
629.136 MHz	40.45 Pk	2.43 / 19.07 / 24.2 / 0.0	37.75	-57.9	V / 1.00 / 90
255.59 MHz	47.2 Pk	1.3 / 11.6 / 24.3 / 0.0	35.8	-59.8	H / 1.00 / 90
116.742 MHz	47.65 Pk	0.79 / 8.08 / 24.29 / 0.0	32.23	-63.4	V / 1.00 / 270
196.556 MHz	44.25 Pk	1.09 / 10.37 / 24.38 / 0.0	31.32	-64.3	V / 1.00 / 180
127.796 MHz	46.5 Pk	0.83 / 7.47 / 24.21 / 0.0	30.59	-65.0	H / 2.00 / 90
176.954 MHz	42.95 Pk	1.01 / 8.97 / 24.4 / 0.0	28.53	-67.1	V / 1.00 / 270
216.272 MHz	41.1 Pk	1.16 / 10.36 / 24.32 / 0.0	28.29	-67.3	V / 1.00 / 180
167.156 MHz	42.25 Pk	0.98 / 8.45 / 24.4 / 0.0	27.28	-68.3	H / 1.00 / 270

1-6 GHz

1.218 GHz	73.95 Pk	3.48 / 26.46 / 50.3 / 0.0	53.59	-42.41	V / 1.00 / 300
2.324 GHz	59.95 Pk	5.65 / 27.93 / 47.41 / 0.0	46.12	-49.88	V / 1.00 / 0
2.322 GHz	59.55 Pk	5.64 / 27.93 / 47.37 / 0.0	45.75	-50.25	V / 1.00 / 131
4.062 GHz	49.6 Pk	8.62 / 32.08 / 46.32 / 0.0	43.98	-52.02	V / 1.00 / 0
2.843 GHz	54.45 Pk	7.06 / 29.32 / 48.3 / 0.0	42.53	-53.47	V / 1.00 / 0
3.655 GHz	49.15 Pk	8.19 / 31.71 / 47.24 / 0.0	41.81	-54.19	V / 1.00 / 0
2.437 GHz	56.25 Pk	5.9 / 28.33 / 48.83 / 0.0	41.66	-54.34	V / 1.00 / 17
3.249 GHz	50.7 Pk	7.76 / 30.72 / 47.77 / 0.0	41.42	-54.58	V / 1.00 / 0
1.625 GHz	60.35 Pk	4.25 / 26.25 / 49.55 / 0.0	41.31	-54.69	V / 1.00 / 91
2.031 GHz	52.4 Pk	5.06 / 27.46 / 48.01 / 0.0	36.91	-59.09	H / 1.00 / 270

Model 2424048351, 440 MHz, 1 watt
30-1000 MHz

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	FINAL eirp (dBm)	POL / HGT / AZ (m)(DEG)
50.48 MHz	66.45 Pk	0.55 / 12.88 / 24.4 / 0.0	55.48	-40.1	V / 1.00 / 145
880.0 MHz	48.9 Pk	2.88 / 22.3 / 24.2 / 0.0	49.88	-45.7	/ 1.00 / 324
373.563 MHz	49.0 Pk	1.74 / 14.57 / 24.3 / 0.0	41.01	-54.6	V / 1.00 / 0
393.243 MHz	43.2 Pk	1.81 / 15.23 / 24.3 / 0.0	35.94	-59.7	V / 1.00 / 0
412.875 MHz	42.2 Pk	1.88 / 16.02 / 24.3 / 0.0	35.79	-59.8	V / 1.00 / 0
353.907 MHz	43.85 Pk	1.66 / 14.4 / 24.3 / 0.0	35.61	-60.0	V / 1.00 / 0

1-6 GHz

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	FINAL eirp (dBm)	POL / HGT / AZ (m)(DEG)
1.32 GHz	68.0 Pk	3.66 / 25.54 / 50.11 / 0.0	47.09	-48.91	V / 1.00 / 266
2.321 GHz	59.6 Pk	5.64 / 27.93 / 47.35 / 0.0	45.82	-50.18	V / 1.00 / 310
2.2 GHz	55.35 Pk	5.4 / 27.5 / 43.1 / 0.0	45.15	-50.85	V / 1.00 / 290
3.96 GHz	50.8 Pk	8.51 / 32.22 / 46.84 / 0.0	44.69	-51.31	V / 1.00 / 180
3.08 GHz	53.3 Pk	7.58 / 30.17 / 47.99 / 0.0	43.07	-52.93	V / 1.00 / 180
4.4 GHz	47.35 Pk	8.98 / 32.26 / 46.46 / 0.0	42.13	-53.87	V / 1.00 / 0
3.52 GHz	47.75 Pk	8.05 / 31.38 / 47.41 / 0.0	39.76	-56.24	V / 1.00 / 0
2.64 GHz	50.25 Pk	6.48 / 28.86 / 48.56 / 0.0	37.03	-58.97	V / 1.00 / 0
1.76 GHz	52.3 Pk	4.52 / 26.83 / 49.3 / 0.0	34.35	-61.65	V / 1.00 / 0

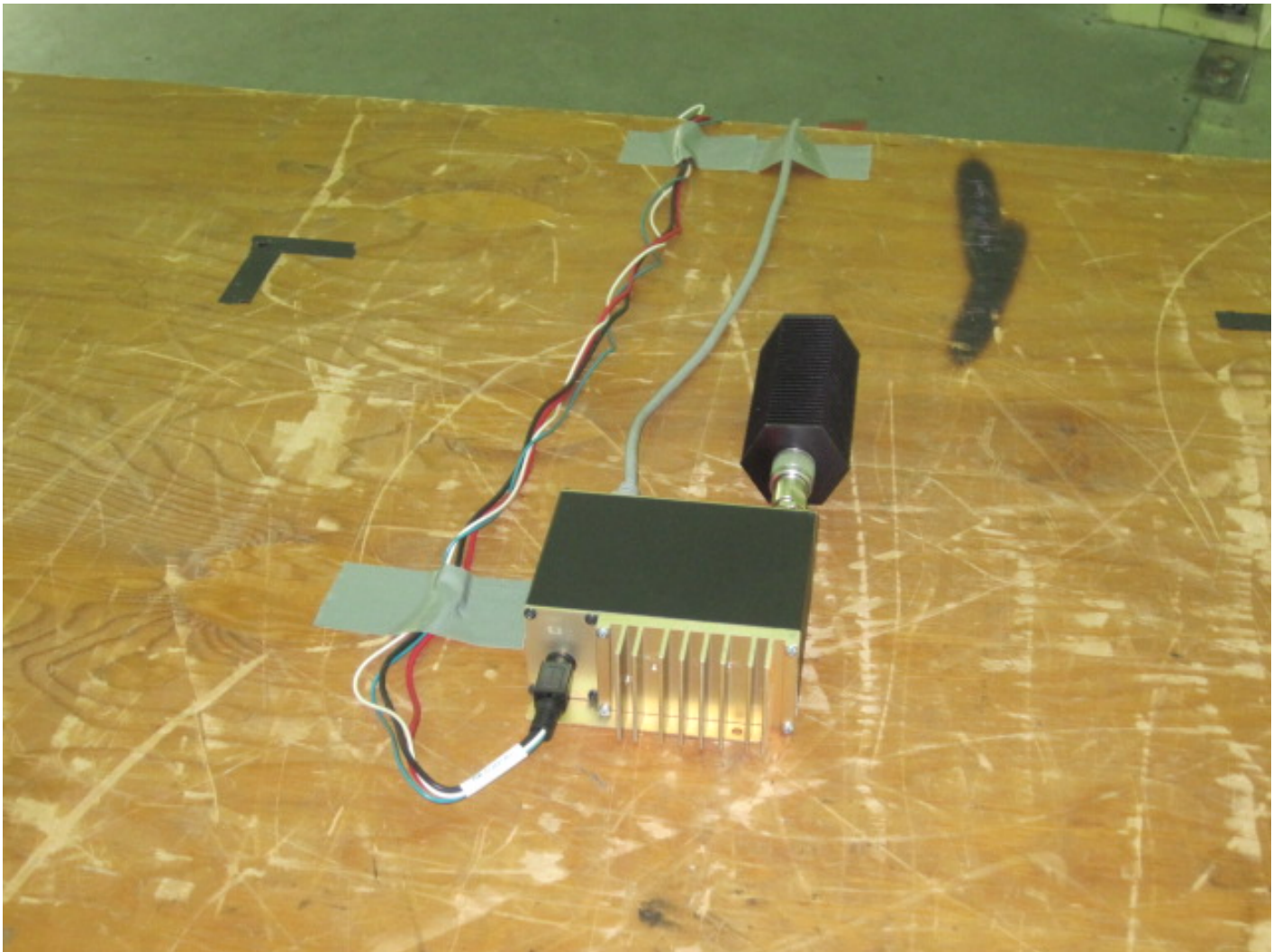
Model 2424048351, 440 MHz, 5 watt
30-1000 MHz

50.48 MHz	66.35 Pk	0.55 / 12.88 / 24.4 / 0.0	55.38	-40.2	V / 1.00 / 183
880.0 MHz	52.7 Pk	2.88 / 22.3 / 24.2 / 0.0	53.68	-41.9	H / 1.00 / 150
49.78 MHz	61.9 Pk	0.55 / 13.1 / 24.4 / 0.0	51.15	-44.5	V / 1.00 / 0
373.563 MHz	46.55 Pk	1.74 / 14.57 / 24.3 / 0.0	38.56	-57.0	V / 1.00 / 0
393.243 MHz	44.45 Pk	1.81 / 15.23 / 24.3 / 0.0	37.19	-58.4	V / 1.00 / 0
353.907 MHz	45.35 Pk	1.66 / 14.4 / 24.3 / 0.0	37.11	-58.5	V / 1.00 / 0
629.136 MHz	39.4 Pk	2.43 / 19.07 / 24.2 / 0.0	36.7	-58.9	V / 1.00 / 0
412.875 MHz	42.9 Pk	1.88 / 16.02 / 24.3 / 0.0	36.49	-59.1	V / 1.00 / 0
127.796 MHz	43.5 Pk	0.83 / 7.47 / 24.21 / 0.0	27.59	-68.0	V / 1.00 / 0
255.59 MHz	38.8 Pk	1.3 / 11.6 / 24.3 / 0.0	27.4	-68.2	V / 1.00 / 0
216.272 MHz	39.25 Pk	1.16 / 10.36 / 24.32 / 0.0	26.44	-69.2	V / 1.00 / 0
196.556 MHz	38.45 Pk	1.09 / 10.37 / 24.38 / 0.0	25.52	-70.1	V / 1.00 / 0
176.954 MHz	39.25 Pk	1.01 / 8.97 / 24.4 / 0.0	24.83	-70.8	V / 1.00 / 0
167.156 MHz	36.55 Pk	0.98 / 8.45 / 24.4 / 0.0	21.58	-74.0	V / 1.00 / 0

1-6 GHz

FREQ	LEVEL (dBuV)	CABLE / ANT / PREAMP / ATTEN (dB)	FINAL (dBuV / m)	FINAL eirp (dBm)	POL / HGT / AZ (m)(DEG)
3.96 GHz	56.5 Pk	8.51 / 32.22 / 46.84 / 0.0	50.39	-45.61	V / 1.30 / 211
2.64 GHz	60.4 Pk	6.48 / 28.86 / 48.56 / 0.0	47.18	-48.82	V / 2.00 / 0
2.2 GHz	56.75 Pk	5.4 / 27.5 / 43.1 / 0.0	46.55	-49.45	V / 1.37 / 340
1.76 GHz	63.35 Pk	4.52 / 26.83 / 49.3 / 0.0	45.4	-50.6	V / 1.40 / 355
2.323 GHz	58.65 Pk	5.65 / 27.93 / 47.38 / 0.0	44.84	-51.16	V / 1.00 / 180
1.32 GHz	63.0 Pk	3.66 / 25.54 / 50.11 / 0.0	42.09	-53.91	V / 1.13 / 256
3.08 GHz	52.15 Pk	7.58 / 30.17 / 47.99 / 0.0	41.92	-54.08	V / 1.00 / 0
4.4 GHz	46.8 Pk	8.98 / 32.26 / 46.46 / 0.0	41.58	-54.42	V / 1.00 / 0
3.52 GHz	48.8 Pk	8.05 / 31.38 / 47.41 / 0.0	40.81	-55.19	V / 1.00 / 0

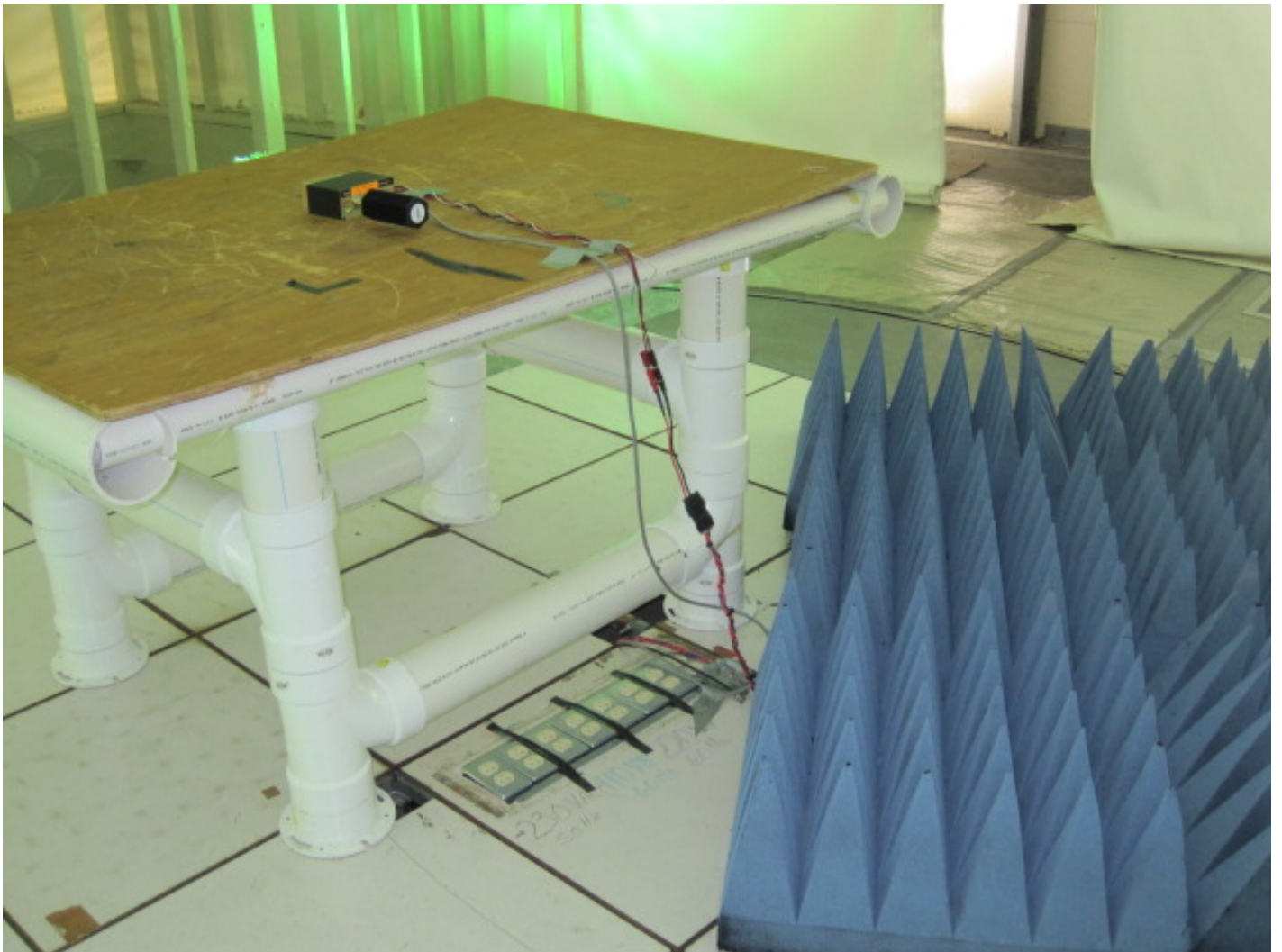
Test Setup Photo
Radiated emissions



Test Setup Photo
Radiated emissions



Test Setup Photo
Radiated emissions



Equipment Under Test (EUT) Test Operation Mode:

Configurations of the devices under test:

1. Tested with the transmitter keyed up at 5.0 Watts at the low and high frequencies of each model into a 50 ohm load.
2. Tested with the transmitter keyed up at 1.0 Watts at the low and high frequencies of each model into a 50 ohm load.
3. Tested in receive mode for Local Oscillators and Modem emissions at the low and high frequencies of each model into a 50 ohm load.



DEVIATIONS FROM STANDARD:

None

GENERAL REMARKS:Modifications required to pass:

- None
- As indicated in the Test Plan

Test Specification Deviations: Additions to or Exclusions from:

- None
- As indicated in the Test Plan

SUMMARY:

The requirements according to the technical regulations are

- met
- **not** met.

The device under test does

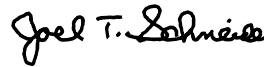
- fulfill the general approval requirements mentioned on page 3.
- **not** fulfill the general approval requirements mentioned on page 3.

EUT Received Date: 11 December 2012
Condition of EUT: Normal
Testing Start Date: 11 December 2012
Testing End Date: 12 December 2012

- TÜV SÜD AMERICA INC -



Greg S Jakubowski
Senior EMC Technician



Joel T Schneider
Senior EMC Engineer

Appendix A

Constructional Data Form

and

Block Diagram





EMC Test Plan and Constructional Data Form

PLEASE COMPLETE THIS DOCUMENT IN FULL, ENTERING N/A IF THE FIELD IS NOT APPLICABLE. IF TESTING RESULTS IN MODIFICATIONS TO THE EQUIPMENT, PLEASE SUBMIT A REVISED TP/CDF INDICATING THOSE MODIFICATIONS.
NOTE: This information will be input into your test report as shown below. Press the F1 key at any time to get HELP for the current field selected.

Company: CalAmp WNG
 Address: 299 Johnson Ave Suite 110
Waseca, Mn 56093
 Contact: Bill Junge Position: RF Engineering Technologist
 Phone: 507-833-6733 Fax: 507-833-6758
 E-mail Address: bjunge@calamp.com

General Equipment Description -- NOTE: This information will be input into your test report as shown below.

EUT Description UHF Radio Modem
 EUT Name INTEGRA-TR, UHF 406.1-440 MHZ, 6.25/12.5K DUAL BAND IF
INTEGRA-TR, UHF 440.1-476 MHZ, 6.25/12.5K DUAL BAND IF
 Model No.: 2424048351 and 2424048551 Serial No.: 594819 and 594817
 Product Options: None
 Configurations to be tested: Power Supply @ 13.3 Vdc, RS232 connected to laptop, Antenna port 50 ohm load.

Equipment Modification (If applicable, indicate modifications since EUT was last tested. If modifications are made during this testing, submit revised TP/CDF after testing is complete.)

Modifications since last test: _____
 Modifications made during test: _____

Test Objective(s): Please indicate the tests to be performed, entering the applicable standard(s) where noted.

- | | | | |
|---|-------------------------------------|------------------|---|
| <input type="checkbox"/> EMC Directive 2004/108/EC (EMC)
Std: _____ | <input checked="" type="checkbox"/> | FCC: Class | <input checked="" type="checkbox"/> A <input type="checkbox"/> B Part <u>90</u> |
| <input type="checkbox"/> Machinery Directive 89/392/EEC (EMC)
Std: _____ | <input type="checkbox"/> | VCCI: Class | <input type="checkbox"/> A <input type="checkbox"/> B |
| <input type="checkbox"/> Medical Device Directive 93/42/EEC (EMC)
Std: _____ | <input type="checkbox"/> | BSMI: Class | <input type="checkbox"/> A <input type="checkbox"/> B (Separate Report) |
| <input type="checkbox"/> _____
Std: _____ | <input type="checkbox"/> | Canada: Class | <input checked="" type="checkbox"/> A <input type="checkbox"/> B |
| <input type="checkbox"/> _____
Std: _____ | <input type="checkbox"/> | Australia: Class | <input type="checkbox"/> A <input type="checkbox"/> B |
- Field Strength of Spurious Radiation
 FCC 2.1053, 90.210 (b,3)(d,3), FCC Part 15 Radiated
 Canada RSS119 Section 5.8 and 5.11
 We just need radiated transmitter and receiver measurements only.
- Other: _____
 Vehicle Directive - 2004/104/EC (EMC)
 Other Vehicle Std: _____
 Ag Directive *2009/64/EC (EMC)
 FDA Reviewers Guidance for Premarket Notification Submissions (EMC)



EMC Test Plan and Constructional Data Form

Third Party Certification (contact TÜV for quote), if applicable (*Signature on last page required).	
<input type="checkbox"/> Attestation of Compliance (AoC)*	<input type="checkbox"/> EMC Certification (used with Octagon Mark)*
<input type="checkbox"/> Statement of Compliance (SoC, previously CoC)* - All aspects of the essential requirements were assessed	
Protection Class (Req'd for AoC, SoC, EMC Cert. N/A for vehicles) <input type="checkbox"/> Class I <input type="checkbox"/> Class II <input type="checkbox"/> Class III (Press F1 when field is selected to show additional information on Protection Class.)	
<input type="checkbox"/> FCC / TCB Certification	<input type="checkbox"/> Taiwan Certification
<input type="checkbox"/> Industry Canada / FCB Certification	<input type="checkbox"/> Korean Certification
<input type="checkbox"/> e-Mark Certification	

Attendance
Test will be: <input checked="" type="checkbox"/> Attended by the customer <input type="checkbox"/> Unattended by the customer

Failure - Complete this section if testing will not be attended by the customer.
If a failure occurs, TÜV SÜD America should:
<input type="checkbox"/> Call contact listed above, if not available then stop testing. (After hrs phone): _____
<input type="checkbox"/> Continue testing to complete test series.
<input type="checkbox"/> Continue testing to define corrective action.
<input type="checkbox"/> Stop testing.

EUT Specifications and Requirements
Length: <u>4.75"</u> Width: <u>4.50"</u> Height: <u>2.4"</u> Weight: <u>1.6 lbs.</u>

Power Requirements
<i>Regulations require testing to be performed at typical power ratings in the countries of intended use. (i.e., European power is typically 230 VAC 50 Hz or 400 VAC 50 Hz, single and three phase, respectively)</i>
Voltage: <u>13.3 Vdc</u> (If battery powered, make sure battery life is sufficient to complete testing.)
of Phases: _____
Current (Amps/phase(max)): <u>2.6 Adc Max.</u> Current (Amps/phase(nominal)): _____
Other _____

Other Special Requirements
NONE

Typical Installation and/or Operating Environment
(ie. Hospital, Small Business, Industrial/Factory, etc.) Industrial Monitoring and Control.

EUT Power Cable
<input type="checkbox"/> Permanent OR <input checked="" type="checkbox"/> Removable Length (in meters): <u>0.91 m (36")</u>
<input type="checkbox"/> Shielded OR <input checked="" type="checkbox"/> Unshielded
<input type="checkbox"/> Not Applicable



EMC Test Plan and Constructional Data Form

EUT Interface Ports and Cables														
Type	Analog	Digital	During Test		Qty	Shielding		Termination	Connector Type	Port Termination	Length tested (in meters)	Removable	Permanent	
			Active	Passive		Yes	No							Type
EXAMPLE:														
RS232	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Foil over braid	Coaxial	Metallized 9-pin D-Sub	Characteristic Impedance	6	<input checked="" type="checkbox"/>	<input type="checkbox"/>
RS232	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>			Metallized 9 pin D-Sub	Characteristic Impedance	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Power Cable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	KY-Con KPP-4P		4 pin DC, Ground, two analog inputs not used for testing.	Characteristic Impedance fo the power supply. The two analog inputs are open and unterminated.	0.91	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Antenna Port	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Bird 25-T-MN 50 ohm 25 watt load		Shielded Load	50 ohms	0	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>



EMC Test Plan and Constructional Data Form

EUT Software.

Revision Level: 7.00

Description: Integra Programming Software

Equipment Under Test (EUT) Operating Modes to be Tested -- list the operating modes to be used during test. It is recommended the equipment be tested while operating in a typical operation mode. FCC testing of personal computers and/or peripherals requires that a simple program generate a complete line of upper case H's. Provide a general description of all software, firmware, and PLD algorithms used in the equipment. List all code modules as described above, with the revision level used during testing. Consult with your TÜV Product Service Representative if additional assistance is required.

1. Tested with the transmitter keyed up at 5.0 Watts at the low and high frequencies of each model into a 50 ohm load.
2. Tested with the transmitter keyed up at 1.0 Watts at the low and high frequencies of each model into a 50 ohm load.
3. Tested in receive mode for Local Oscillators and Modem emissions at the low and high frequencies of each model into a 50 ohm load.

Equipment Under Test (EUT) System Components -- List and describe all components which are part of the EUT. For FCC & Taiwan testing a minimum configuration is required. (ie. Mouse, Printer, Monitor, External Disk Drive, Motherboard, etc)

Description	Model #	Serial #	FCC ID #
NONE			



EMC Test Plan and Constructional Data Form

Support Equipment -- List and describe all support equipment which is not part of the EUT. (i.e. peripherals, simulators, etc)
This information is required for FCC & Taiwan testing.

<i>Description</i>	<i>Model #</i>	<i>Serial #</i>	<i>FCC ID #</i>
Compaq Laptop	nc6000	CNU447F26M	CNTWM3B2200BGA
RS232 Cable	TBD		

Oscillator Frequencies

<i>Manufacturer</i>	<i>Frequency</i>	<i>Derived Frequency</i>	<i>Component # / Location</i>	<i>Description of Use</i>
Crystek CVCO55- 602538	406-485 MHz		8853443445 - Y850 2424048351 Model.	440-485 MHz RF 1 st Local Oscillator mix frequency for the receiver 406-440 MHz on channel Transmitter
Crystek CVCO55- 602539	440-521 MHz		8853443480 - Y850 2424048551 Model.	485-521 MHz 1 st RF Local Oscillator mix frequency for the receiver 440-476 MHz on channel Transmitter
Transko - TCXO- 1238- 14.400M	14.4 MHz		4187009529 Y801	0.50 PPM TCXO stable frequency source for the VCO/Synthesizer.
Phillips SA616 Receiver 2 nd Oscillator Mix frequency in a Synthesizer PLL	44.450 MHz		4442002032 - U311	Receiver IF IC.



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Power Supply			
Manufacturer	Model #	Serial #	Type
HP	6284 or Equivalent	N/A	<input type="checkbox"/> Switched-mode: (Frequency) _____ <input checked="" type="checkbox"/> Linear <input type="checkbox"/> Other: _____
			<input type="checkbox"/> Switched-mode: (Frequency) _____ <input type="checkbox"/> Linear <input type="checkbox"/> Other: _____

Power Line Filters		
Manufacturer	Model #	Location in EUT
NONE		

Critical EMI Components (Capacitors, ferrites, etc.)				
Description	Manufacturer	Part # or Value	Qty	Component # / Location
NONE				

EMC Critical Detail -- Describe other EMC Design details used to reduce high frequency noise.

NONE

PLEASE ENTER NAMES BELOW (INSERT ELECTRONIC SIGNATURE IF POSSIBLE)

Authorization (Signature Required if a Third Party Certification is checked on pg 1)

William M. Junge

11/28/2012

Customer authorization to perform tests according to this test plan.

Date

Test Plan/CDF Prepared By (please print)

Date